Patent Claims

1. Imaging system for motor vehicles, comprising
a projector (14, 15), and
a holographic ray uniter (11, 11', 11"), which guides narrow band light to a viewer (17) to produce a virtual image (16, 16', 16") at the viewing location,
characterized by
a holographic screen (13), which is produced by means of holographic shooting of a real screen and scatters incident narrow band light of one or more wavelengths at a predetermined solid angle,
whereby the projector (14, 15) projects the light onto the holographic screen (13) to produce there real images, and the holographic ray uniter (11, 11', 11") is transparent to broad band ambient light; and the narrow band light, scattered by the holographic screen (13), is guided to the viewer (17).

2. Imaging system, as claimed in claim 1, characterized by a camera system, which is coupled to the projector, to shoot images outside the motor vehicle to enable the view to the rear and / or to the side.

3. Imaging system, as claimed in claim 1 or 2, characterized in that the holographic ray uniter (11, 11', 11") is arranged, from the viewer's view, in front of and / or on the windshield (12) of the motor vehicle.

4. Imaging system, as claimed in one or more of the preceding claims, characterized in that the ray uniter (11, 11', 11") is designed as a holographic mirror.

5. Imaging system, as claimed in one or more of the preceding claims, characterized in that the ray uniter (11, 11', 11") is designed as a ray deflector with lens function.

6. Imaging system, as claimed in one or more of the preceding claims, characterized in that the projector (14, 15) comprises lasers with the primary colors red, green and blue.

7. Imaging system, as claimed in one or more of the preceding claims, characterized in that the projector (14, 15) comprises an image modulator (14), in particular ferroelectric liquid modulators and / or micro mirror devices.

8. Imaging system, as claimed in one or more of the preceding claims, characterized in that the ray uniter (11, 11', 11") is disposed on a transparent plate.

9 Imaging system, as claimed in one or more of the preceding claims, characterized in that the holographic ray uniter (11, 11', 11") and the holographic screen (13) are arranged in such a manner that the virtual image appears for the viewer (17) enlarged behind the windshield (12) of the motor vehicle, preferably at a distance of at least 1.5 meters to the viewer, especially preferred at a distance of at least 3 meters.

10. Imaging system, as claimed in one or more of the preceding claims, characterized by a device for coupling the imaging to vehicle control functions and / or the motor vehicle control functions.

11. Imaging system, as claimed in one or more of the preceding claims, characterized in that the ray uniter (11, 11', 11") and / or the holographic screen (13) is / are designed and arranged in such a manner that the light cone coming from the ray uniter (11, 11', 11") is limited to the possible dwelling space of the viewer's (17) eyes.

12. Imaging system, as claimed in one or more of the preceding claims, characterized in that the ray uniter (11, 11', 11") and / or the holographic screen (13) is / are designed and arranged in such a manner that they exhibit an imaging function.

13. Method for displaying images in motor vehicles with the steps:

Project images on a holographic screen (13) and guide the light rays, coming from the holographic screen (13), into a viewer's (17) eyes, whereby virtual images (16, 16', 16") are produced in a surface cutout of the windshield (12) of the motor vehicle by means of a hologram, whose purpose is ray deflection (11, 11', 11") and which is connected in series to the holographic screen (13).

14. Method for displaying images in motor vehicles with the steps:

Project narrow band light of one or more wavelengths on a holographic screen (13), which is produced by holographic shooting of a real screen, to produce a real image on the holographic screen (13), and
guide the light rays, scattered by the holographic screen (13) at a predetermined solid angle, into a viewer's (17) eye,
whereby the light rays are deflected through a hologram and produce a virtual image at the viewer (17), while simultaneously broad band light of the environment lying behind the hologram passes through the hologram.

15. Method, as claimed in claim 13 or 14, wherein images (16, 16', 16") of the view to the rear and / or from the perspective of the motor vehicle side mirrors are faded into the peripheral area of the windshield (12).

Sub a7 16. Method, as claimed in one or more of the claims 13 to 15, wherein the angular distance between the visual axis in the direction of travel and the virtual image (16, 16', 16") is less than 30 degrees, preferably approximately 10 degrees.

Sub a7 17. Method, as claimed in one or more of the claims 13 to 16, wherein the rear and / or side images from the motor vehicle are displayed as a function of the driving state or the motor vehicle control functions.

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